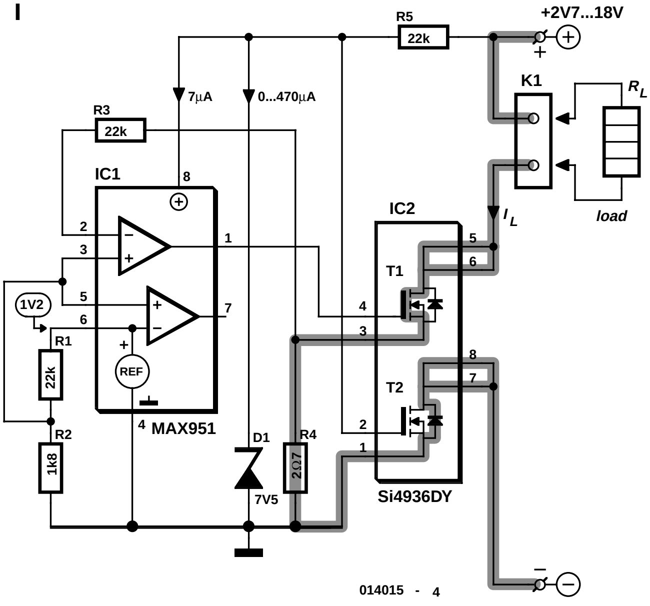
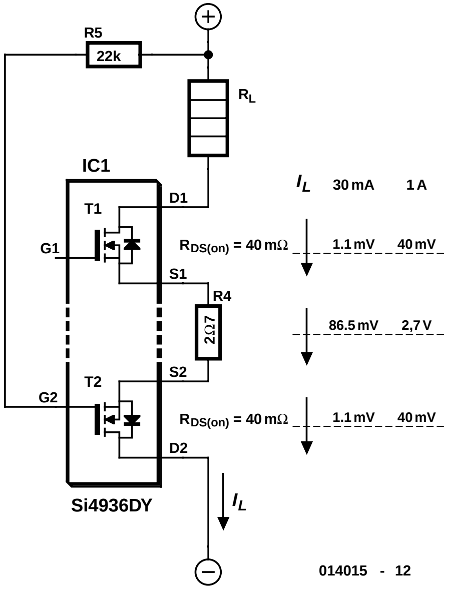
Constant Current Sink

1



2



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The precision current sink shown in **Figure 1**, which uses a Si4936 DY dual MOSFET (IC1) as a controlled load resistance, is very energy-efficient and thus particularly suitable for use in battery-powered equipment. The voltage drop across current-sense resistor R4 should be approximately 85 mV. IC2 and R4 form the actual current sink, which has a very low dropout voltage. The supply voltage can be reduced to as low as the operating voltage of the load. If the supply voltage is greater than this, transistor T1 in IC2 regulates the supply current. Each of the two MOSFETS T1 and T2 can switch 4.6 A. IC2 is only available in an SO-8 SMD package. **Figure 2** shows the voltages across T1, T2 and R4 for various currents.

IC1, which is a MAX951, includes a 1.200-V reference potential source that is brought out to pin 6. R1 and R2 determine the voltage present at the non-inverting input of opamp IC1 (approximately 90 mV). The sense voltage across R4 is applied to the inverting input, where it is compared with the voltage on pin 3. T2 is only included in the circuit to provide reverse-polarity protection. The maximum allowable voltage between the source and gate also determines the maximum allowable supply voltage for this circuit.

The values of resistors R4 and R2 must be adjusted to match the desired constant current value. The circuit is primarily intended to be used with small currents. If the load current is greater than 200 mA, the value of shunt resistor R4 should be reduced.

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